

20070627.ba v04\_n064.bam.20070627

>From ???@??? Wed Jun 27 10:21:08 2007 -0500  
Date: Wed, 27 Jun 2007 15:20:13 GMT  
From: Old Tube Radios <boatanchors@theporch.com>  
To: Old Tube Radios <boatanchors@theporch.com>  
Subject: BOATANCHORS digest 4064  
Message-Id: <20070627152014.A1AFF4700F1@srvr1.theporch.com>

BOATANCHORS Digest 4064

Topics covered in this issue include:

- 1) Re: Solid State Rectifier Repalcement For 51J Radios & Others  
by "Brian A Clarke" <brianclarke01@optusnet.com.au>
- 2) Re: Carl & Jerry Poptronics reprints  
by "JAMES HANLON" <knjhanlon@msn.com>
- 3) Re: Solid State Rectifier Repalcement For 51J Radios & Others  
by "Tom Rauch" <w8ji@contesting.com>
- 4) Re: Solid State Rectifier Repalcement For 51J Radios & Others  
by stuck in 50s <polepeeg@aa4rm.ba-watch.org>
- 5) Re: Looking for HP 5425L schematic  
by "John Gillespie" <jgillespie@porchlight.ca>
- 6) SAQ will be on 7/1  
by stuck in 50s <polepeeg@aa4rm.ba-watch.org>
- 7) Addenda to: For Sale--National NC-2-40D Receiver  
by John Sehring <jsehring@siouxvalley.net>
- 8) Re: Looking for HP 5425L schematic  
by "Arden Allen" <gumbear@pacbell.net>
- 9) Re: Solid State Rectifier Repalcement For 51J Radios & Others  
by "Arden Allen" <gumbear@pacbell.net>
- 10) Re: Looking for HP 5425L schematic  
by "ChasW3KC" <w3kc@verizon.net>
- 11) Re: Solid State Rectifier Repalcement For 51J Radios & Others  
by "Tom Rauch" <w8ji@contesting.com>
- 12) Re: Solid State Rectifier Repalcement For 51J Radios & Others  
by WA5CAB@cs.com
- 13) Re: Solid State Rectifier Repalcement For 51J Radios & Others  
by "Arden Allen" <gumbear@pacbell.net>
- 14) Re: Solid State Rectifier Replacement For 51J Radios & Others  
by Scott Robinson <spr@earthlink.net>
- 15) Re: Solid State Rectifier Repalcement For 51J Radios & Others  
by "Tom Rauch" <w8ji@contesting.com>
- 16) Re: Looking for HP 5425L schematic  
by "John Gillespie" <jgillespie@porchlight.ca>
- 17) unsubscribe  
by "James Reid" <jreid@ci.santa-maria.ca.us>

-----  
Message-ID: <02ba01c7b7a8\$23f9a320\$0202a8c0@Belkin>  
From: "Brian A Clarke" <brianclarke01@optusnet.com.au>  
To: Old Tube Radios <boatanchors@theporch.com>  
Subject: Re: Solid State Rectifier Repalcement For 51J Radios & Others  
Date: Tue, 26 Jun 2007 14:11:57 +1000  
MIME-Version: 1.0  
Content-Type: text/plain;  
        charset="iso-8859-1"  
Content-Transfer-Encoding: 7bit

Hi Arden and Tom,

The easiest way to equalise reverse Voltages across diodes is to swamp each diode's inherent reverse capacitance. At AC, it's the reverse capacitance that accounts for the unequal distribution of reverse Voltages in a string of diodes. A 10 nF capacitor across each diode, suitably Voltage rated should do. Then there's no need to find expensive resistors and waste energy in heat or to book future maintenance.

This has been the standard method used in all high power Australian commercial transmitters for yonks.

73 de Brian, VK2GCE.

-----  
Message-ID: <BAY110-DAV11C69D2FF885A44D1C7B5A00B0@phx.gbl>  
From: "JAMES HANLON" <knjhanlon@msn.com>  
To: Old Tube Radios <boatanchors@theporch.com>  
Subject: Re: Carl & Jerry Poptronics reprints  
Date: Mon, 25 Jun 2007 22:57:30 -0600  
MIME-Version: 1.0  
Content-Type: multipart/alternative;  
        boundary="-----\_NextPart\_000\_0725\_01C7B77C.358D2A20"

This is a multi-part message in MIME format.

-----\_NextPart\_000\_0725\_01C7B77C.358D2A20  
Content-Type: text/plain;  
        charset="iso-8859-1"  
Content-Transfer-Encoding: quoted-printable

When I worked for Bell Labs, Murray Hill, NJ back around 1963, the local =  
police used to set up their radar speed trap along the road leading to a =  
shopping center that contained an eatery that some of our better off =  
staff members used to frequent. One of the guys got tired of getting =  
speeding tickets, so he fashioned a corner reflector antenna tuned to =

the the radar frequency into the grill work of his car. When he drove =  
by the radar transmitter, he apparently reflected so much power back =  
that it burned out their mixer diode. He watched in his rear view =  
mirror as the police got out and banged on their radar box after he had =  
passed by. I seem to remember that he removed the reflector before they =  
got wise. NJ had a law against sharp objects on the outside of a car =  
that might catch something or someone, meant I think to keep rust =  
buckets off the road. They might well have applied it to his antenna, =  
especially if they had put two and two together.

Jim, W8KGI

-----=\_NextPart\_000\_0725\_01C7B77C.358D2A20

Content-Type: text/plain; charset=us-ascii

Content-Transfer-Encoding: 7bit

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* * * * *
*      ---REMAINDER OF MESSAGE TRUNCATED---      *
*      This post contains a forbidden message format      *
*      (such as an attached file, a v-card, HTML formatting) *
*      Mail Lists at theporch.com only accept PLAIN TEXT      *
*      If your postings display this message your mail program *
*      is not set to send PLAIN TEXT ONLY and needs adjusting *
* * * * *
```

-----=\_NextPart\_000\_0725\_01C7B77C.358D2A20--

-----  
Message-ID: <012d01c7b7d7\$a693bc60\$640fa8c0@radioroom>

From: "Tom Rauch" <w8ji@contesting.com>

To: Old Tube Radios <boatanchors@theporch.com>

Subject: Re: Solid State Rectifier Replacement For 51J Radios & Others

Date: Tue, 26 Jun 2007 05:51:34 -0400

MIME-Version: 1.0

Content-Type: text/plain;

format=flowed;

charset="iso-8859-1";

reply-type=original

Content-Transfer-Encoding: 7bit

```
> The easiest way to equalise reverse Voltages across diodes
> is to
> swamp each diode's inherent reverse capacitance. At AC,
> it's the
> reverse capacitance that accounts for the unequal
> distribution of
> reverse Voltages in a string of diodes. A 10 nF capacitor
> across
> each diode, suitably Voltage rated should do. Then there's
```

- > no
- > need to find expensive resistors and waste energy in heat
- > or to
- > book future maintenance.

That method is correct for some slow diodes Brian, but the real problem is not voltage division. It is reverse recovery time. Mostly the capacitors are for transient or harmonic suppression.

The days of needing resistors (and capacitors) went away when leaky poor reverse resistance diodes went away, and that was around the 60's. From that point forward silicon power rectifiers are virtual open circuits until the breakdown is approached, and at that point the diode acts like a zener. As a diode approaches reverse avalanche it gradually clamps, and the better diodes take more reverse voltage...which is exactly what we want.

This is why if you put your 1950 rectifier books away with all the metal top-hat rectifiers of the 50's and 60's and get out a copy of the Diode and Rectifier Handbook or any number of rectifier books, or put away the 1960 Handbook and get out the newer editions, you'll see the world has changed. Minority carrier concentration is so low in modern silicon power rectifiers reverse leakage current isn't a factor.

This is why Heath never used parallel components, and why Ameritron and others do not. Now some Ameritron amps use capacitors across the diodes in higher voltage supplies but that's for another problem, harmonic generation in the rectifiers. (The SB1000 uses capacitors, but they are for rectifier harmonic suppression.)

As a matter of fact when people buy those big rectifier stacks in epoxy, sometimes called "block rectifiers", inside is a series string of rectifiers without any "equalizing" components. Even the ARRL Handbook, as early as 1995 (or earlier) on page 11-9 center column explains why rectifier "equalization" is prone to cause premature rectifier failure.

Motorola's Rectifier Handbook advises against equalization for the sake of equalization in HV stacks.

Of course if you still use 1950's or early 60's top-hat diodes or Germanium diodes, you'll want to use equalization.

73 Tom

-----  
Date: Tue, 26 Jun 2007 07:57:02 -0400 (EDT)  
From: stuck in 50s <polepeeg@aa4rm.ba-watch.org>  
Message-Id: <200706261157.15QBv2C8029511@fracas.netboobie.org>  
To: Old Tube Radios <boatanchors@theporch.com>  
Subject: Re: Solid State Rectifier Repalcement For 51J Radios & Others

Tom, among things, u wrote...

} The days of needing resistors (and capacitors) went away  
} when leaky poor reverse resistance diodes went away, and  
} that was around the 60's. From that point forward silicon  
} power rectifiers are virtual open circuits until the  
} breakdown is approached, and at that point the diode acts  
} like a zener. As a diode approaches reverse avalanche it  
} gradually clamps, and the better diodes take more reverse  
} voltage...which is exactly what we want.

Xtra gud info.

I've an early SS replacement for an 872 that went into catastrophe with all diodes now shorted. Appearance is almost industrial art in that it had the "50W base" epoxied to a thick piece of G10 fiberglass & the string of diode/disc-cap/resistor clusters seriesed right up to the AC-connection cap. Will try to find & foto this SS relic & put her on the web

Marty

-----  
Message-ID: <001c01c7b7e9\$4429c6c0\$5d31bb40@k9a1e1>  
From: "John Gillespie" <jgillespie@porchlight.ca>  
To: Old Tube Radios <boatanchors@theporch.com>  
Cc: "old tube radios" <boatanchors@theporch.com>  
Subject: Re: Looking for HP 5425L schematic  
Date: Tue, 26 Jun 2007 07:58:07 -0400  
MIME-Version: 1.0  
Content-Type: text/plain;  
charset="iso-8859-1"  
Content-Transfer-Encoding: 7bit

Thanks Arden, for the tip on using Craig Pro-Gold on the edge connectors. I've heard that stuff recommended here before. Do you have any ideas why the rate control pot acts up due to the very mild damp air in the spring? Every season I think I've beaten it at last, and about a month after the furnace stops depleating my wallet, the 5245L starts acting up, I could almost set a clock to it. The control and switches work fine all year and don't appear to be scratchy or intermittant, I assume its dirty contacts again. Any solutions..... john

Subject: Re: Looking for HP 5425L schematic  
> Treating the connector contacts and board fingers with a proper metal  
> protectant will extend that maintenance period to ten years or more. Caig  
> Pro-Gold should do the job.  
> Arden Allen KB6NAX

-----  
Date: Tue, 26 Jun 2007 08:34:09 -0400 (EDT)  
From: stuck in 50s <polepeeg@aa4rm.ba-watch.org>  
Message-Id: <200706261234.15QCY9xq029824@fracas.netboobie.org>  
To: Old Tube Radios <boatanchors@theporch.com>  
Subject: SAQ will be on 7/1

SAQ is the 17.2 kc 200kw Alexanderson alternator @ Grimeton, Sweden

Copy in the US is sketchy but wasn't in 1922 when the circuit between it's qth \$ Riverhead, LI, NY was set up.

Last running Alexanderson - a real-live mechanical generator with output not at 60 or 400 or whatever. But 17.2 khz

RX approaches which include PCs w. soundcard, up-converters, use of USN RAK & DZ dinosaur rxs, etc. abound on the web

Go here for schedule detail

<http://lwca.org/mb/msg/484.htm>

Marty

-----  
Content-Disposition: inline  
Content-Transfer-Encoding: binary  
Mime-Version: 1.0  
From: John Sehring <jsehring@siouxvalley.net>  
To: Old Tube Radios <boatanchors@theporch.com>  
Subject: Addenda to: For Sale--National NC-2-40D Receiver  
Content-Type: text/plain  
Message-Id: <20070626175422.DD5A833CB3D@filter1.e-filtering.net>

Date: Tue, 26 Jun 2007 11:54:22 -0600 (MDT)

The following was \*\*\*omitted\*\*\* from my For Sale posting for a National NC-2-40D Receiver:

Price: \$325 \*\*\*Or Best Offer.\*\*\*

--John Sehring WB0EQ/VE6

-----  
Message-ID: <008801c7b831\$b7c110a0\$dd9f480c@KB6NAX>

From: "Arden Allen" <gumbear@pacbell.net>

To: Old Tube Radios <boatanchors@theporch.com>

Subject: Re: Looking for HP 5425L schematic

Date: Tue, 26 Jun 2007 12:52:20 -0700

MIME-Version: 1.0

Content-Type: text/plain;

charset="iso-8859-1"

Content-Transfer-Encoding: 7bit

> .....Do you have any ideas why

> the rate control pot acts up due to the very mild damp air in the spring?

I have a pair of 5245L's I'm saving for a "rainy day" ;-). I'd have to look at the schematics to come up with a possible cause for what you describe. I know there are germanium transistors throughout and there may also be some temperature sensitivity to deal with. So it may be a combination of external leakage effects and transistor leakage that the biasing is not correct for. Also to consider is upgrading critical circuits to silicon transistors for improved bias stability.

Arden Allen

KB6NAX

-----  
Message-ID: <008901c7b831\$b966d160\$dd9f480c@KB6NAX>

From: "Arden Allen" <gumbear@pacbell.net>

To: Old Tube Radios <boatanchors@theporch.com>

Subject: Re: Solid State Rectifier Replacement For 51J Radios & Others

Date: Tue, 26 Jun 2007 13:04:08 -0700

MIME-Version: 1.0

Content-Type: text/plain;

charset="iso-8859-1"

Content-Transfer-Encoding: 7bit

> ....That method is correct for some slow diodes Brian, but the

> real problem is not voltage division. It is reverse recovery  
> time. Mostly the capacitors are for transient or harmonic  
> suppression. ....

This thread is getting to be like swatting flies! "Slow" diodes, meaning diodes with reverse recovery times suitable for power line frequencies as opposed to switching power conversion applications where switching frequencies are typically 25kHz and above. What that has to do with using shunt capacitors for impedance equalization (as opposed to resistance equalization using resistors) is confusing me. I suppose, Tom, there is a hidden issue regarding diode stress when shunting "slow" diodes with capacitors? Or any diodes for that matter? Can you explain?

Diode shunt capacitors will lower the ringing frequency of the transformer-rectifier combination and add to reverse recovery time losses which is negligible at power line frequencies. Does that increase diode stress? Let's get to the bottom of this as my '89 Handbook is all for shunting diodes with resistors and capacitors. Is there a seminal article on this subject?

Anyone using "slow" diodes at high frequencies is ignorant of the loss issues and is not competent to design such power supplies. At high frequencies (using short recovery time diodes) the junction capacitive reactance is low enough that the diodes have built-in capacitive equalization and adding capacitors would simply increase losses with scarcely any benefit. Besides high voltages are more likely to be attained using rectifier voltage multiplication instead of a lossy high turns count transformer to produce the high voltage. But I'm getting a little out of my pond as I'm not a high frequency power supply designer so I'm interested in the followup comments.

Arden Allen  
KB6NAX

-----  
Date: Tue, 26 Jun 2007 16:58:09 -0400  
From: "ChasW3KC" <w3kc@verizon.net>  
Subject: Re: Looking for HP 5425L schematic  
To: Old Tube Radios <boatanchors@theporch.com>  
Message-id: <000801c7b834\$b3ed1de0\$2f01a8c0@chas>  
MIME-version: 1.0  
Content-type: text/plain; format=flowed; charset=iso-8859-1; reply-type=original  
Content-transfer-encoding: 7bit

I have a pair of 5233L's. I really enjoy the Nixies.  
73 Chas W3KC

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Message-ID: <007401c7b866\$0b4c1920\$640fa8c0@radiatoroom>  
From: "Tom Rauch" <w8ji@contesting.com>  
To: Old Tube Radios <boatanchors@theporch.com>  
Subject: Re: Solid State Rectifier Replacement For 51J Radios & Others  
Date: Tue, 26 Jun 2007 22:51:05 -0400  
MIME-Version: 1.0  
Content-Type: text/plain;  
    format=flowed;  
    charset="iso-8859-1";  
    reply-type=original  
Content-Transfer-Encoding: 7bit

> This thread is getting to be like swatting flies!

I'll say.

As an amplifier designer for many years I've had many long conversations with semiconductor engineers as well as collected all the data.

The ARRL Handbook is often slow to catch up when things change, a good example is they have just within the past few years figured out how CW bandwidth really works and corrected the CW section of the Handbook, and CW has been around since the start of radio.

They did, around the 90's, catch up with the changes in semiconductor diodes that took place in the 1960's. It was around that time period that reverse leakage currents in silicon power rectifiers became so low (due to better manufacturing) that it is inconsequential. As a matter of fact the Motorola Rectifier Applications handbook opens the section on reverse current with the following pearl of wisdom; "Reverse leakage current is so low with the majority of silicon p-n junction rectifiers diodes that it plays no role in design." They don't say a small role, they say "no role".

Now there are diodes that have leakage issues that should be addressed in series strings, but they are either ultra fast diodes or Schottky diodes.

The reverse leakage in a traditional silicon p-n junction power rectifier, at least since the 60's, is dominated by the appearance of rapidly increasing reverse current as voltage exceeds a certain threshold. When we force the weakest diode in a string to have equal voltage with the strongest, and supply that current through a resistance many

dozens or hundreds of times lower than the leakage through the other diodes, we actually decrease reliability.

If you pop the top on your SB220 and look at the rectifier stack, you will not find any shunting components. This is also true in the big block rectifiers in your microwave oven, or old Silicon Al and his block rectifiers. As a matter of fact within the past three months I built a test fixture for a production environment that used a 10kV 2 amp block rectifier. That device high-pots a system by reverse biasing the rectifier at 5kV, and the reverse leakage through the rectifier doesn't even come close to faulting a 10uA high pot test. There clearly aren't any resistors inside, and the leakage is insignificant.

Reverse high-pot some diodes and you'll see how they act. They aren't like insulated gate FET gates, they are like zeners. It's all about the heat.

When one of the rectifiers in a reverse string gets close to breakdown, it will clamp the reverse voltage. It does this because it acts like a zener and has a decrease in reverse resistance long before it gets anywhere close to the point of damage. If we don't use resistors or excessively large shunting capacitors current is well down in nanoamperes, and the junction won't heat any amount worth worrying about and won't fail.

Now add an intentional few mA or so reverse current and it is another story. You might have a few watts additional heat in that weak junction, where before it might have had tiny fractions of a watt heat from reverse currents. Add that to the forward dissipation and you might toast a diode that would have been fine if you let its brothers help it out a bit.

The only time resistors help is when the reverse leakage current is high enough to dominate the zenering effect, and that normally only occurs in ultra fast or Schottky diodes.

-----  
From: WA5CAB@cs.com

Message-ID: <bcd.d3f492c.33b33072@cs.com>

Date: Tue, 26 Jun 2007 23:16:02 EDT

Subject: Re: Solid State Rectifier Replacement For 51J Radios & Others

To: Old Tube Radios <boatanchors@theporch.com>

MIME-Version: 1.0

Content-Type: multipart/alternative;

boundary="part1\_bcd.d3f492c.33b33072\_boundary"

--part1\_bcd.d3f492c.33b33072\_boundary  
Content-Type: text/plain; charset="US-ASCII"  
Content-Transfer-Encoding: 7bit

Now wait a minute. If you put a resistor across a diode there is no way that it, by itself, can cause reverse current to flow through an otherwise good diode. The reverse current will flow through the resistor. The only way in which the reverse current through the resistor would add a few watts of heat to the diode would be if you carefully thermally coupled the two components together. And no one with greater than single digit IQ would do that.

Presence of the resistor(s) will decrease the theoretical reliability of the ideal rectifier but only because reliability is inversely proportional to component count, other things being equal.

In a message dated 6/26/2007 9:51:27 PM Central Daylight Time, w8ji@contesting.com writes:

> Now add an intentional few mA or so reverse current and it  
> is another story. You might have a few watts additional heat  
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> bit.  
>

Robert Downs - Houston  
<<http://www.wa5cab.com>> (Web Store)  
MVPA 9480  
<[wa5cab@cs.com](mailto:wa5cab@cs.com)> (Primary email)  
<[wa5cab@houston.rr.com](mailto:wa5cab@houston.rr.com)> (Backup email)

--part1\_bcd.d3f492c.33b33072\_boundary  
Content-Type: text/plain; charset=us-ascii  
Content-Transfer-Encoding: 7bit

```
* * * * *
*      ---REMAINDER OF MESSAGE TRUNCATED---      *
*      This post contains a forbidden message format      *
*      (such as an attached file, a v-card, HTML formatting) *
*      Mail Lists at theporch.com only accept PLAIN TEXT      *
*      If your postings display this message your mail program *
*      is not set to send PLAIN TEXT ONLY and needs adjusting *
* * * * *
```

--part1\_bcd.d3f492c.33b33072\_boundary--

-----  
Message-ID: <002501c7b876\$be3981c0\$79a1480c@KB6NAX>  
From: "Arden Allen" <gumbear@pacbell.net>  
To: Old Tube Radios <boatanchors@theporch.com>  
Subject: Re: Solid State Rectifier Replacement For 51J Radios & Others  
Date: Tue, 26 Jun 2007 21:47:55 -0700  
MIME-Version: 1.0  
Content-Type: text/plain;  
        charset="iso-8859-1"  
Content-Transfer-Encoding: 7bit

> .....As a matter of  
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> section on reverse current with the following pearl of  
> wisdom; "Reverse leakage current is so low with the  
> majority of silicon p-n junction rectifiers diodes that it  
> plays no role in design." .....

It wouldn't be the first time I've been at odds with manufacturer's application notes. That's not a "pearl of wisdom," it's more like electronic heresy (with the backdoor "majority" thrown in for good measure). Let's get down to common sense. You know, the kind that functions by reason.

There is no such thing as zero leakage current in a diode. If leakage resistance is high compared to junction capacitance the capacitive reactance of a diode will dominate and voltage distribution will be accomplished by the diode shunt capacitances in the string. Therefore to prove the Motorola statement one must determine the maximum variance in diode impedance at maximum operating junction temperature (leakage current increases exponentially with temperature).

The whole point is to avoid approaching diode reverse breakdown voltage as reverse current will rapidly increase before the breakdown "knee" is reached. Reverse breakdown voltages are not well matched in general purpose rectifier diodes like the 1N4000 series. However controlled avalanche types such as the 1N5059-62 series which are employed to control voltage spikes have closely matched reverse breakdown voltages. That doesn't mean you have to use controlled avalanche diodes in a string. It means you have to properly specify the breakdown voltage rating for diodes in a string. A good rule of thumb would be to not allow the rated breakdown voltage to be more than 75% approached; 750 volts peak for a 1N4007, for example.

Now, after all that blather, I still want to know what is wrong with using shunt resistors (of good quality, naturally). Who's the boogie man that blows up diodes that have shunt resistors????

PS:

> As an amplifier designer for many years I've had many long  
> conversations with semiconductor engineers as well as  
> collected all the data.

I can tell you authoritatively (cuz I heard it on TV) that 40,000 people die a year in auto accidents. But I'm no authority on why people don't drive safely. I drive safely but that doesn't make me an expert on causing accidents.

Arden Allen  
KB6NAX

-----  
Mime-Version: 1.0  
Message-Id: <p06240802c2a7c3351e57@[192.168.1.2]>  
Date: Wed, 27 Jun 2007 00:35:17 -0700  
To: Old Tube Radios <boatanchors@theporch.com>  
From: Scott Robinson <spr@earthlink.net>  
Subject: Re: Solid State Rectifier Replacement For 51J Radios & Others  
Content-Type: text/plain; charset="us-ascii" ; format="flowed"

You've missed the point. If one diode has a lower peak inverse voltage (zenering voltage) than the others in the string, it will conduct first and have to carry the few mA of resistor current AT ITS ZENER VOLTAGE, maybe 1 kV. That's a lot of heat.

Regards,

Scott Robinson

>Now wait a minute. If you put a resistor across a diode there is no way that  
>it, by itself, can cause reverse current to flow through an otherwise good  
>diode. The reverse current will flow through the resistor. The only way in  
>which the reverse current through the resistor would add a few watts  
>of heat to  
>the diode would be if you carefully thermally coupled the two components  
>together. And no one with greater than single digit IQ would do that.  
>  
>Presence of the resistor(s) will decrease the theoretical reliability of the  
>ideal rectifier but only because reliability is inversely proportional to  
>component count, other things being equal.  
>

>In a message dated 6/26/2007 9:51:27 PM Central Daylight Time,  
>w8ji@contesting.com writes:  
>> Now add an intentional few mA or so reverse current and it  
>> is another story. You might have a few watts additional heat  
>> in that weak junction, where before it might have had tiny  
>> fractions of a watt heat from reverse currents. Add that to  
>> the forward dissipation and you might toast a diode that  
>> would have been fine if you let its brothers help it out a  
>> bit.  
>>  
>  
>Robert Downs - Houston  
><<http://www.wa5cab.com>> (Web Store)  
>MVPA 9480  
><[wa5cab@cs.com](mailto:wa5cab@cs.com)> (Primary email)  
><[wa5cab@houston.rr.com](mailto:wa5cab@houston.rr.com)> (Backup email)  
>

-----  
Message-ID: <00ad01c7b89d\$84a4d640\$640fa8c0@radioroom>  
From: "Tom Rauch" <[w8ji@contesting.com](mailto:w8ji@contesting.com)>  
To: Old Tube Radios <[boatanchors@theporch.com](mailto:boatanchors@theporch.com)>  
Subject: Re: Solid State Rectifier Repalcement For 51J Radios & Others  
Date: Wed, 27 Jun 2007 05:28:18 -0400  
MIME-Version: 1.0  
Content-Type: text/plain;  
    format=flowed;  
    charset="iso-8859-1";  
    reply-type=original  
Content-Transfer-Encoding: 7bit

> Now wait a minute. If you put a resistor across a diode  
> there is no way that  
> it, by itself, can cause reverse current to flow through  
> an otherwise good  
> diode. The reverse current will flow through the  
> resistor.

If you force all the diodes to have equal voltage across  
them in the reverse direction, it always increases the  
dissipation in the worse diode assuming there is one that is  
out of spec. It never makes things better unless the diodes  
are so poor reverse leakage current is an issue.  
You also add parts that decrease reliability and increase  
cost for no reason.

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Message-ID: <000001c7b8c4\$7e374280\$3130bb40@k9a1e1>  
From: "John Gillespie" <jgillespie@porchlight.ca>  
To: Old Tube Radios <boatanchors@theporch.com>  
Cc: "old tube radios" <boatanchors@theporch.com>  
Subject: Re: Looking for HP 5425L schematic  
Date: Wed, 27 Jun 2007 10:06:15 -0400  
MIME-Version: 1.0  
Content-Type: text/plain;  
charset="iso-8859-1"  
Content-Transfer-Encoding: 7bit

Hi Arden:

Sounds intense. These are great counters, I use mine at least every other day. So far, its has always been possible to get the count started again by fiddling with the Sample Rate control pot, and sometimes by rotating the Function and Time Base control switches, which makes me think it nothing more than contact contamination, plus cleaning the same has always been able to restore all functions. Craig Pro-Gold on the switches may help, do you know of a good cleaner relubricate for the plastic pots in the Sample Rate control. I have never wanted to spray a contact cleaner in there, I am sure it would finish them off. hihi.....john

> I'd have to look  
> at the schematics to come up with a possible cause for what you describe.  
I  
> know there are germanium transistors throughout and there may also be some  
> temperature sensitivity to deal with. So it may be a combination of  
> external leakage effects and transistor leakage that the biasing is not  
> correct for. Also to consider is upgrading critical circuits to silicon  
> transistors for improved bias stability.  
> Arden Allen  
> KB6NAX

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Content-class: urn:content-classes:message  
MIME-Version: 1.0  
Content-Type: multipart/alternative;  
boundary="----\_=\_NextPart\_001\_01C7B8CE.9DFA1D42"  
Subject: unsubscribe  
Date: Wed, 27 Jun 2007 08:19:55 -0700  
Message-ID: <0907A3C375FD314D8028C00024CF3CDC0371C678@csm30.city.santa.maria>  
From: "James Reid" <jreid@ci.santa-maria.ca.us>  
To: Old Tube Radios <boatanchors@theporch.com>

This is a multi-part message in MIME format.

-----\_=\_NextPart\_001\_01C7B8CE.9DFA1D42

Content-Type: text/plain;  
charset="US-ASCII"  
Content-Transfer-Encoding: quoted-printable

=20  
=20

-Jim=20  
Information Technology - Utilities Dept.=20  
City of Santa Maria=20  
Santa Maria, CA 93458=20  
805-925-0951 x445=20

=20

-----\_=\_NextPart\_001\_01C7B8CE.9DFA1D42  
Content-Type: text/plain; charset=us-ascii  
Content-Transfer-Encoding: 7bit

\* \* \* \* \*  
\* ---REMAINDER OF MESSAGE TRUNCATED--- \*  
\* This post contains a forbidden message format \*  
\* (such as an attached file, a v-card, HTML formatting) \*  
\* Mail Lists at theporch.com only accept PLAIN TEXT \*  
\* If your postings display this message your mail program \*  
\* is not set to send PLAIN TEXT ONLY and needs adjusting \*  
\* \* \* \* \*

-----\_=\_NextPart\_001\_01C7B8CE.9DFA1D42--

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End of BOATANCHORS Digest 4064  
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